
U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

Thomas J. Casadevall, Acting Director

Reston, VA 20192

For information, contact:

Gerald R. Smith, Lead Commodity Specialist

Telephone: (703) 648-4983, Fax: (703) 648-7757

E-mail: grsmith@usgs.gov

Richelle Gipe (Data), (703) 648-7961

MINES-FaxBack: (703) 648-4999

Inernet: <http://minerals.er.usgs.gov/minerals>

LEAD IN DECEMBER 1997

Mine production, based upon the net quantity of lead recovered in the smelting of concentrate, increased by 4% in December but was down by 8% compared with production in December 1996. Primary refinery production decreased by 1% in December but increased by 13% compared with production in December 1996. Secondary refinery production decreased by about 4% in December and was down by about 2% compared with production in December 1996. Reported consumption remained essentially unchanged in December.

According to *Platt's Metals Week* published quotations, the average North American producer price and London Metal Exchange (LME) cash price moved downward for the third consecutive month, decreasing by 1.2% and 6.5%, respectively. In early December, two major U.S. producers reduced lead premiums, reflecting a moderate decrease in demand for replacement batteries, but strong market fundamentals remained, according to some analysts. Contributing to the lower premiums was the lower LME price, which has been below \$600 per ton (27.2 cents per pound) since late October (American Metal Market, 1997a).

National Defense Stockpile cash disposal (sale) of lead in December was 13,181 metric tons (14,530 short tons). The December sale included the award of about 11,000 metric tons (12,000 short tons) under negotiated long-term contracts. Sale of lead to date in fiscal year 1998 (October through December 1997) was 20,411 metric tons (22,499 short tons).

The U.S. Department of Health and Human Services, Food and Drug Administration, recently amended the food additive regulations to provide for the safe use of a source of radiation to treat refrigerated or frozen uncooked meat, meat byproducts, and certain meat food products to control food-borne pathogens and extend product shelf life (U.S. Department of Health and Human Services, 1997). As a result of this amendment, manufacturers of fabricated lead products have noted the

possibility of an expanded market for lead in the field of radiation shielding. Should the meat industry select to use the irradiation procedure extensively, there would be the need for a significant quantity of radiation shielding to protect employees at the processing plants, as well as the need for additional lead containers to transport radiation material to the users of the irradiation technology. A spokesman for a lead fabricating company stated that the shielding installed in slaughterhouses and meat packing plants would resemble the type used in security scanners, since the meat irradiation procedure would also use a low-intensity form of radiation (American Metal Market, 1997b).

Ventures Resource Corp., an international exploration company, reported the discovery of significant sulfide mineralization, containing lead, zinc, and silver, on its Lead Creek property in east-central Alaska. Initial drilling results revealed massive sulfide deposits at grades ranging from 2.1 to 7.2% lead, 0.2 to 1.5% zinc, and 89 to 109 grams of silver per ton. Additional mineralization was revealed in silicified limestone at grades up to 8.6% lead, 4% zinc, and 195 grams of silver per ton (Mining Journal, 1997).

European-based mining company Navan Resources plc and Ireland's Tara Mines Ltd., a wholly owned subsidiary of Finland's Outokumpu, have signed a new joint-venture agreement to explore for zinc-lead deposits in Ireland. The main target area for exploration will be the geological sequence known as the Palc Beds, which hosts the zinc-lead Navan deposit. According to a Navan spokesperson, the deposit has yielded 46 million tons of ore at a grade of 8.5% zinc and 2.1% lead over the past 20 years. An estimated 30 million tons of ore is reported to remain at the Navan deposit (Platt's Metals Week, 1997b).

Boliden Ltd., Toronto, Canada, reported that the design production rate has been reached at its newly opened

Los Frailes Mine near Sevilla, Spain. The mine, located adjacent to the recently depleted Aznalcollar Mine, will be operated using most of the existing infrastructure from Aznalcollar. The capacity of the concentrator was expanded to 4 million tons per year, up from 2.3 million tons. In addition, significant modifications were made to the mill, including the introduction of fully autogenous grinding and the installation of larger flotation cells. Annual production at Los Frailes is expected to be 125,000 tons of zinc, 47,000 tons of lead, and 3 million ounces of silver in concentrates (Platt's Metals Week, 1997a).

Cominco Ltd., Vancouver, Canada, canceled its decision to reopen the Sa Dena Hes zinc-lead mine in Yukon Territory, citing deteriorating market conditions, particularly, lower zinc prices. The original plan was to restart the mine during the second quarter of 1998. The Sa Dena Hes venture is owned jointly by Cominco (25%), Canada's Teck Corp. (25%), and Korea Zinc Inc. (50%), and was purchased in December 1993. The mine was operated by its previous owner, Canada's Curragh Ltd., during the period August 1991 to

November 1992; it yielded 374,000 tons of zinc and 280,000 tons of lead. At the time of the shutdown, estimates of reserves at Sa Dena Hes were reported to be 1.75 million tons at an average grade of 12.1% zinc and 3.4% lead (Metal Bulletin, 1997).

References Cited

- American Metal Market, 1997a, Lead premiums reflect doldrums: American Metal Market, v. 105, no. 232, December 2, p. 2.
- 1997b, Lead sees opportunity in irradiation shields: American Metal Market, v. 105, no. 238, December 10, p. 1.
- Metal Bulletin, 1997, Cominco says Sa Dena Hes to stay closed: Metal Bulletin, no. 8238, December 18, p. 5.
- Mining Journal, 1997, Lead Creek massive sulphides: Mining Journal, v. 329, no. 8459, December 12, p. 484.
- Platt's Metals Week, 1997a, Los Frailes zinc mine hits capacity: Platt's Metals Week, v. 68, no. 49, December 8, p. 11.
- 1997b, Navan, Tara in exploration deal: Platt's Metals Week, v. 68, no. 48, December 1, p. 7.
- U.S. Department of Health and Human Services, 1997, Irradiation in the production, processing and handling of food: Federal Register, v. 62, no. 232, December 3, p. 64107-64121.

TABLE 1
SALIENT LEAD STATISTICS IN THE UNITED STATES 1/

(Metric tons)

	1996		1997		
	Year total	Jan. - Dec.	Nov.	Dec.	Jan. - Dec.
Production:					
Mine (recoverable)	426,000	418,000	31,700	32,800	415,000
Primary refinery 2/	326,000	326,000	29,000	28,700	343,000
Secondary refinery:					
Reported by smelters/refineries	1,080,000	1,010,000	92,400	88,900	1,060,000
Estimated	--	16,100	1,610	1,500	17,700
Recovered from copper-base scrap e/	16,400	15,000	1,250	1,250	15,000
Total secondary	1,100,000	1,040,000	95,200	91,700	1,090,000
Stocks, end of period:					
Primary refineries 2/	XX	XX	8,710	11,900	XX
Secondary smelters and consumers	XX	XX	71,900	78,800	XX
Imports for consumption:					
Ore and concentrates (lead content)	6,570	6,570	--	NA	17,800 3/
Refined metal	268,000	268,000	23,700	NA	246,000 3/
Consumption:					
Reported	1,530,000	1,230,000	101,000 r/	100,000	1,240,000
Undistributed e/	--	454,000	16,400 r/	16,300	202,000
Total	1,530,000	1,680,000	117,000 r/	117,000	1,440,000
Exports (lead content):					
Ore and concentrates	59,700	59,700	1,040	NA	41,600 3/
Materials excluding scrap	102,000	102,000	8,580	NA	82,000 3/
Ash and residues	19,400	19,400	1,270	NA	16,200 3/
TEL/TML preparations, based on lead compounds	3,200	3,200	151	NA	2,330 3/
Exports (gross weight): Scrap	85,300 4/	85,300 4/	8,520	NA	80,200 3/
Platt's Metals Week North American producer price (cents per pound)	48.83	48.83	45.83	45.26	46.54

e/ Estimated. r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ Data from American Bureau of Metal Statistics, Inc. (ABMS).

3/ Includes data for January - November only; December data not available at time of publication.

4/ Includes only non-battery scrap data.

TABLE 2
MONTHLY AVERAGE LEAD PRICES

	North American producer price cents/lb	LME		Sterling exchange rate dollars/£
		\$/metric ton	£/metric ton	
1996:				
December	48.52	688.38	413.71	1.663933
Year average	48.83	773.87	495.56	1.561616
1997:				
September	46.31	633.81	395.81	1.601276
October	46.19	599.80	367.30	1.633009
November	45.83	562.95	333.32	1.688906
December	45.26	526.19	317.04	1.659000
Average Jan. - Dec.	46.54	623.74	381.07	1.637978

Source: Platt's Metals Week.

TABLE 3
MINE PRODUCTION OF RECOVERABLE LEAD IN THE UNITED STATES 1/

(Metric tons)

	1996		1997		
	Year total	Jan. - Dec. r/ 2/	Nov.	Dec.	Jan. - Dec.
Missouri 3/	397,000	391,000	30,600	31,900	400,000
Montana	7,970	8,080	631	445	W
Other States 4/	21,200	22,800	466	454	14,800
Total	426,000	422,000	31,700	32,800	415,000
Daily average 5/	1,160	1,150	1,060	1,060	1,140

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other States."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Annual data not included.

3/ Alaska and Missouri combined to avoid disclosing company proprietary data.

4/ Includes Colorado, Idaho, Illinois, New York and Tennessee.

5/ Based on number of days in period without adjustment for Sundays or holidays.

TABLE 4
CONSUMPTION OF PURCHASED LEAD-BASE SCRAP IN DECEMBER 1997 1/

(Metric tons, gross weight)

Item	Stocks Nov. 30, 1997	Net receipts	Consumption	Stocks Dec. 31, 1997
Battery-lead	28,000	85,600	86,500	27,100
Soft lead	W	W	W	W
Drosses and residues	2,220	4,230	4,360	2,090
Other 2/	2,460	2,610	2,610	2,460
Total	32,700	92,500	93,500	31,600
Percent change from preceding month	--	+7.1	+7.8	-3.2

W Withheld to avoid disclosing company proprietary data; included with "Other."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes solder, common babbitt, antimonial lead, cable covering, type metals, and other lead-base scrap not elsewhere classified.

TABLE 5
LEAD, TIN, AND ANTIMONY RECOVERED FROM LEAD-BASE
SCRAP IN DECEMBER 1997 1/

(Metric tons)

Product recovered	Secondary metal content		
	Lead	Tin	Antimony
Soft and calcium lead	49,300	--	--
Remelt lead	W	W	W
Antimonial lead	33,800	13	W
Other 2/	W	W	--
Total lead-base	88,900	42	415

W Withheld to avoid disclosing company proprietary data; included in "Total."

1/ Data are rounded to three significant digits.

2/ Includes cable lead, lead-base babbitt, solder, type metals, and other products.

TABLE 6
CONSUMPTION OF LEAD IN THE UNITED STATES 1/

(Metric tons, lead content)

Uses	1996		1997		
	Year total	Jan. - Dec. 2/	Nov.	Dec.	Jan. - Dec.
Metal products:					
Ammunition-shot and bullets	52,100	34,900	3,380 r/	4,800	53,500
Brass and bronze-billet and ingots	5,460	5,620	479	514	6,190
Cable covering-power and communication and calking lead-building construction	W	6,130	707	407	5,520
Casting metals	18,800	1,360	406	398	5,200
Pipes, traps, and other extruded products	(3/)	(3/)	(3/)	(3/)	(3/)
Sheet lead	21,200	8,700	1,060	979	15,700
Solder	9,020	5,200	419 r/	324	6,360
Storage batteries, including oxides	1,340,000	1,040,000	93,500 r/	92,300	1,140,000
Terne metal, type metal, and other metal products 4/	9,560	3,700	226	161	2,420
Total metal products	1,460,000	1,110,000	100,000 r/	99,900	1,240,000
Other oxides	(5/)	(5/)	(5/)	(5/)	(5/)
Miscellaneous uses	70,900	12,700	438	501	5,840
Total reported	1,530,000	1,120,000	101,000 r/	100,000	1,240,000
Undistributed consumption e/	--	415,000	16,400 r/	16,300	202,000
Grand total	1,530,000	1,540,000	117,000 r/	117,000	1,440,000

e/ Estimated. r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Total metal products."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data does not include 1996 annual respondents.

3/ Withheld to avoid disclosing company proprietary data; included with "Sheet lead."

4/ Includes lead consumed in bearing metals, foil, collapsible tubes, annealing, plating, galvanizing, and fishing weights.

5/ Withheld to avoid disclosing company proprietary data; included with "Miscellaneous uses."

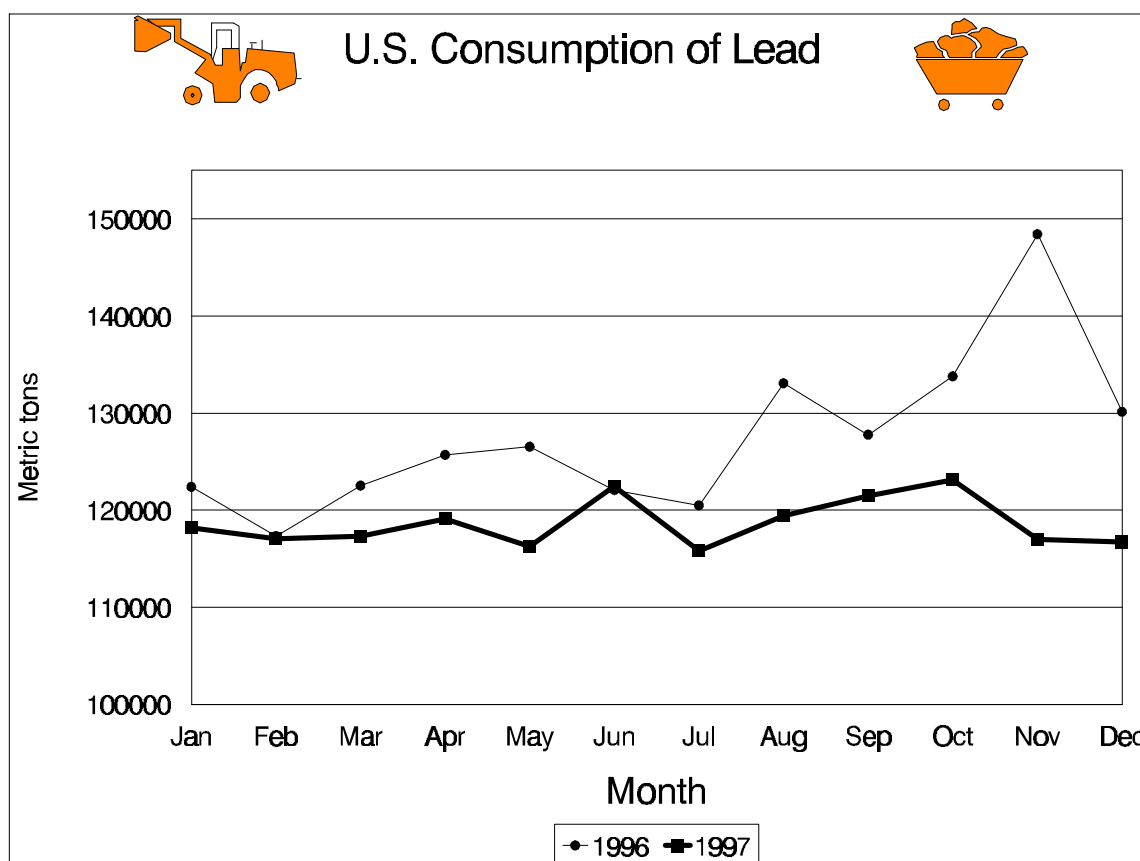


TABLE 7
CONSUMER AND SECONDARY SMELTER STOCKS, RECEIPTS, AND
CONSUMPTION OF LEAD IN DECEMBER 1997 1/

(Metric tons, lead content)

Type of material	Stocks	Net	Consumption	Stocks
	Nov. 30, 1997	receipts		Dec. 31, 1997
Soft lead	34,000 t/	57,400	52,200	39,100
Antimonial lead	31,000 t/	31,700	31,400	31,300
Lead alloys	W	17,700	16,300	W
Copper-base scrap	W	300	300	W
Total	71,900	107,000	100,000	78,800

W Withheld to avoid disclosing company proprietary data; included in "Total."

1/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 8
U.S. EXPORTS OF LEAD, BY CLASS 1/

(Metric tons)

	1996		1997		
	Year total	Nov.	Oct.	Nov.	Jan. - Nov.
Lead content:					
Ore and concentrates	59,700	383	1,350	1,040	41,600
Materials excluding scrap	102,000	6,760	3,670	8,580	82,000
Ash and residues	19,400	3,130	1,390	1,270	16,200
TEL/TML preparations, based on lead compounds	3,200	106	146	151	2,330
Total	184,000	10,400	6,560	11,000	142,000
Gross weight: Scrap	85,300 2/	6,110 2/	9,910	8,520	80,200

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes only non-battery scrap data.

Source: Bureau of the Census.

TABLE 9
U.S. IMPORTS OF LEAD BY TYPE OF MATERIALS AND BY COUNTRY OF ORIGIN 1/

(Metric tons, lead content)

Country of origin	General imports					Imports for consumption				
	1996		1997			1996		1997		
	Year total	Jan. - Nov.	Oct.	Nov.	Jan. - Nov.	Year total	Jan. - Nov.	Oct.	Nov.	Jan. - Nov.
Ore, matte, etc.:										
Bolivia	326	322	273	--	1,120	--	--	--	--	--
Canada	352,000	327,000	18	10,400	70,200	4,370	4,220	(2/)	--	753
Mexico	2,890	2,340	--	--	558	2,080	1,520	--	--	558
Peru	13,400	12,600	2,320	298	9,510	--	--	954	--	3,370
Other	133	133	8,490	3,830	17,500	122	122	8,490	--	13,100
Total	369,000	343,000	11,100	14,600	98,800	6,570	5,860	9,450	--	17,800
Base bullion:										
Canada	--	--	20	--	20	--	--	20	--	20
Mexico	5	5	--	--	5	5	5	--	--	5
Total	5	5	--	--	25	5	5	--	--	25
Pigs and bars:										
Belgium	11	11	--	--	47	11	11	--	--	47
Canada	192,000	175,000	17,300	15,600	173,000	192,000	175,000	17,300	15,600	174,000
Germany	338	258	43	--	401	338	258	43	--	401
Mexico	56,900	52,200	8,060	7,380	64,700	56,900	52,200	8,060	7,380	64,700
Peru	17,100	16,400	500	723	5,920	17,100	16,400	500	723	5,920
United Arab Emirates	160	130	10	--	62	160	130	10	--	62
United Kingdom	19	19	--	--	--	19	19	--	--	--
Other	846	715	80	19	1,070	846	715	80	19	1,070
Total	267,000	245,000	26,000	23,700	246,000	268,000	245,000	26,000	23,700	246,000
Reclaimed scrap, including ash and residues	192	192	--	6	68	192	192	--	6	68
Grand total	636,000	588,000	37,100	38,300	344,000	274,000	251,000	35,500	23,700	264,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

Source: Bureau of the Census.